Intel® Server System SR1530SH
Intel® Server System SR1530HSH

Technical Product Specification

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Enterprise Platforms and Services Division - Marketing

Revision History

Date	Revision Number	Modifications
September 2007	1.0	Initial release.

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1. Introduction

The Intel® Server Systems SR1530SH / SR1530HSH are 1U server systems.

- The Intel® Server System SR1530SH supports one or two fixed Serial ATA (SATA) hard disk drives. The Intel® Server System SR1530SH includes the Intel® Server Board S3200SHL.
- The Intel® Server System SR1530HSH supports up to three hot-swappable SATA disk drives and includes the Intel® Server Board S3200SHL.
- The server boards and the server systems have features that are designed to support the high-density server market. This chapter provides a high-level overview of the system features. Greater detail for each major system component or feature is provided in the following chapters.

1.1 System Views

Figure 1. Intel® Server System SR1530SH

Figure 2. Intel® Server System SR1530HSH

1.2 Chassis Dimensions

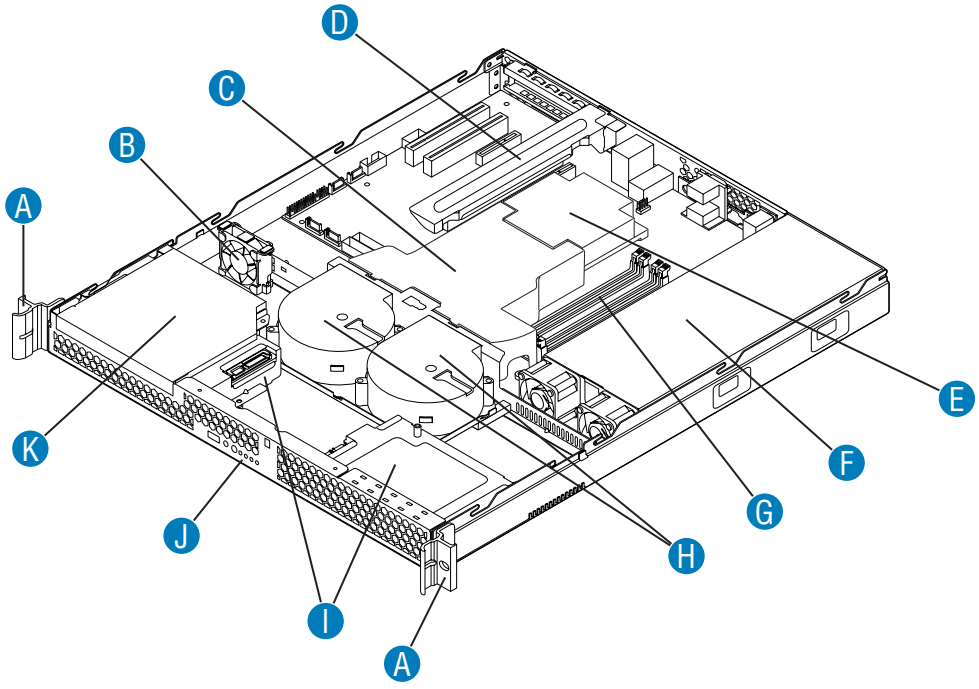
Table 1. Intel® Server System SR1530SH

Height	1.67 inches	42.42 mm
Width without rails	16.93 inches	430.02 mm
Depth	20 inches	508.00 mm
Maximum weight	33 lbs	15 kg

Table 2. Intel® Server System SR1530HSH Dimensions

Height	1.67 inches	42.42 mm
Width without rails	16.93 inches	430.02 mm
Depth	25.51 inches (excluding hard drive carriers, front control panel bezel, rack handles and front bezel.	648 mm

1.3 System Components



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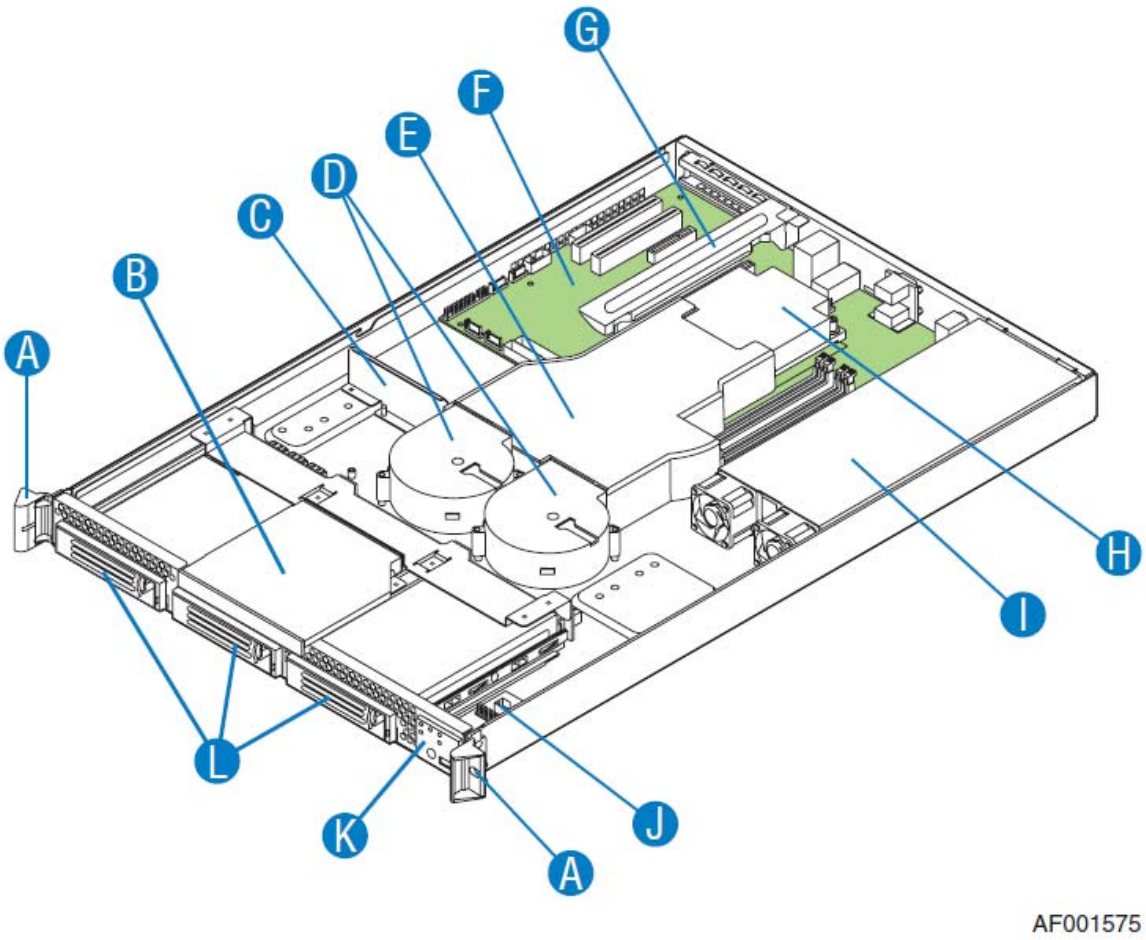
A	Rack handles (2)	G	System memory DIMM sockets
B	PCI cooling fan	H	System blower fans (2)
C	Processor air duct	I	Hard drive brackets (2)
D	PCIe* add-in card bracket	J	Control panel
E	Processor and heat sink	K	Slimline optical drive
F	Power supply		

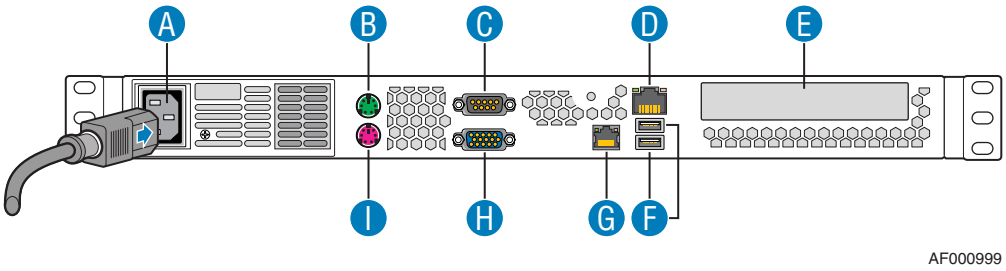
Figure 3. Intel® Server Systems SR1530SH – Major System Components



A	Rack handles (2)	G	PCIe* add-in card bracket
B	Slimline optical drive	H	Processor and heat sink
C	PCI air baffle	I	Power supply
D	System blower fans (2)	J	Control panel board
E	Processor air duct	K	Control panel
F	Intel® Server Board S3200SHL	L	Hard drive bays (3)

Figure 4. Intel® Server System SR1530HSH – Major System Components

The I/O connector locations on the back of the system are pre-cut, so an I/O shield is not required. The EMI gasket is pre-installed to maintain electromagnetic interference (EMI) compliance levels. The layout arrangement is the same for both the fixed and hot-swap systems.



A	AC Power Connector	F	USB Ports 0 - 1
B	PS2 Mouse Port	G	NIC 2 (10/100/1000 Mb)
C	Serial Port (DB9)	H	Video Connector
D	NIC1 (10/100/1000 Mb)	I	PS2 Keyboard Port
E	PCI Express* Add-in Card Slot		

Figure 5. Back Panel Features

1.4 System Boards

The Intel® Server Systems SR1530SH / SR1530HSH include system boards that are used as internal interconnects and provide feature accessibility. The following section provides a brief description for each.

The Intel® Server Systems SR1530SH / SR1530HSH include a front control panel. The front control panel is a printed circuit board routing the outputs of the system board SSI connector to provide a power on/off switch, a power on/off LED, a hard disk drive activity LED, NIC 1 and NIC 2 activity LEDs, and USB port 2.

1.4.1 Intel® Server System SR1530SH

The Intel® Server System SR1530SH includes an Intel® Server Board S3200SHL. This board supports a PCI Express* riser card.

- PCI Express* – capable of supporting a single full height/half-length x8 PCI Express* add-in card.

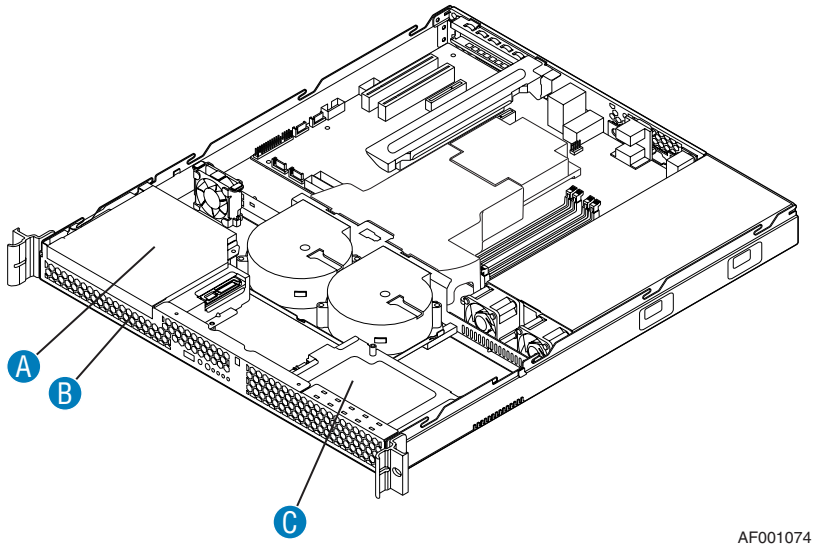
1.4.2 Intel® Server System SR1530HSH

The Intel® Server System SR1530HSH is only available with the Intel® Server Board S3200SHL. This board supports a PCI Express* riser card.

- PCI Express* – capable of supporting a single full height/full-length x16 PCI Express* add-in card.

1.5 Hard Drive and Peripheral Bays

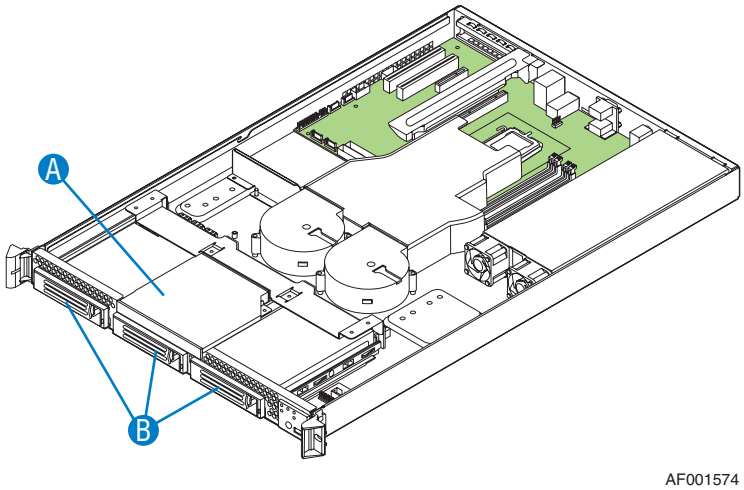
The Intel® Server System SR1530SH is designed to support up to two fixed 3.5-inch SATA hard drives and one slimline optical device.



A	Slimline optical drive bay
B	Hard drive bay HDD0 (located under the slimline optical drive bay)
C	Hard drive bay HDD1

Figure 6. Intel® Server System SR1530SH Drive Bays

The Intel® Server System SR1530HSH is designed to support up to three hot-swap SATA hard drives and one slimline optical device.



A	Slimline Optical Drive Bay
B	Hot-Swap Drive Bays

Figure 7. Intel® Server System SR1530HSH Drive Bays

1.6 System Cooling

The Intel® Server System SR1530SH provides two non-redundant blower fans and one PCI cooling fan. The Intel® Server System SR1530HSH provides two non-redundant blower fans. When external ambient temperatures remain within specified limits, the cooling system will provide sufficient air flow for all drive configurations, processors, supported memory, and add-in cards.

1.7 Rack and Cabinet Mounting Options

The server systems were designed to support 19-inch wide by up to 30-inch deep server cabinets. The server systems supports three rack mount options:

- A basic slide rail kit (Product order code – AXXBASICRAIL) designed to mount the chassis into a standard (19-inch by up to 30-inch deep) EIA-310D compatible server cabinet is included with the server system.
- A fixed mount relay rack / cabinet mount kit (Product order code - AXXBRACKETS) which can be configured to mount the system into either a 2-post or 4-post rack cabinet.
- A tool-less full extracting slide rail kit (Product order code – AXXHERAIL) designed to support an optional cable management arm (Product order code – AXXRACKCARM).

2. Power Sub-System

The power sub-system of the server systems consist of a single non-redundant 350 W power supply with 5 outputs; 3.3V, 5V, 12V, and 5VSB. The form factor fits into a 1U system and provides a wire harness output to the system. An IEC connector is provided on the external face for AC input to the power supply. The power supply provides two non-redundant 40mm fans for self cooling. The power supply fans also provide additional airflow for parts of the system.

The power supply operates within the following voltage ranges and ratings:

Parameter	Minimum	Rated	Maximum	Start up VAC	Power Off VAC
Voltage (110)	90 Vrms	100-127 Vrms	140 Vrms	85Vac +/-4Vac	75Vac +/-5Vac
Voltage (220)	180 Vrms	200-240 Vrms	264 Vrms		
Frequency	47 Hz		63 Hz		

The power supply must operate within all specified limits over the following input voltage range, shown in the table. Harmonic distortion of up to 10% THD must not cause the power supply to go out of specified limits. The power supply shall power off if the AC input is less than 75VAC +/-5VAC range. The power supply shall start up if the AC input is greater than 85VAC +/-4VAC. Application of an input voltage below 85VAC shall not cause damage to the power supply, including a fuse blow.

2.1 Mechanical Specifications

The 1U 350 W power supply is designed specifically for use in the Intel® Server Systems SR1530SH / SR1530HSH. The physical size of the power supply enclosure is intended to accommodate power ranges from 350 W. The power supply size is 40mm x 106mm x 300mm and has a wire harness for the DC outputs. The AC input plugs directly into the external face of the power supply; refer to the following figure.

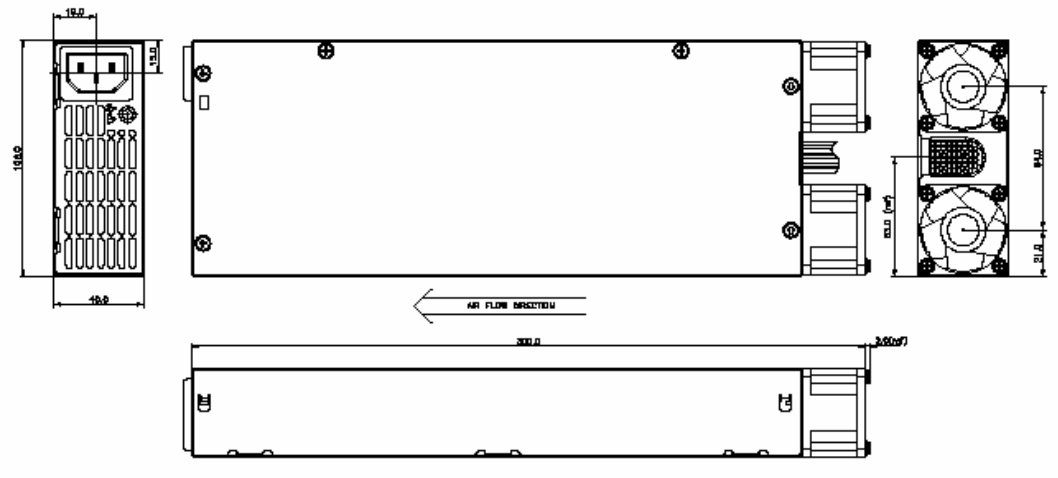


Figure 8. Power Supply Enclosure Drawing

Notes:

1. All dimensions are in mm.
2. The tolerance of the 40mm height dimension (marked with letter C) pertains to the metal case only.

2.2 Output Connectors

Listed or recognized component appliance wiring material (AVLV2), CN, **rated min 80°C**, 300VDC shall be used for all output wiring.

Table 3. Intel® Server Systems SR1530SH / SR1530SHLX Cable Lengths

From	Length (mm)	To connector #	Description
Power Supply cover exit hole	380	P1	Baseboard Power Connector
Power Supply cover exit hole	390	P2	Processor Power Connector
Power Supply cover exit hole	495	P3	HD Power Connector
Power Supply cover exit hole	605	P4	HD Power Connector
Power Supply cover exit hole	860	P5	Slimline Power Connector

Table 4. Intel® Server System SR1530HSH Cable Lengths

From	Length (mm)	To connector #	Description
Power Supply cover exit hole	400	P1	Baseboard Power Connector
Power Supply cover exit hole	380	P2	Processor Power Connector
Power Supply cover exit hole	220	P7	2 x 4 HSBP power connector
P7	100	P4	SATA Drive Power Connector
P4	145	P5	SATA Drive Power Connector
P5	170	P6	CDROM Power Connector

2.2.1 Baseboard power connector (P1)

Connector housing: 20-Pin Molex* Mini-Fit Jr. 39-01-2200 or equivalent.
Contact: Molex Mini-Fit, HCS, female, crimp 44476 or Molex 5556 as the alternative, or equivalent approved by Intel.

Table 5. P1 Main Power Connector

Pin	Signal	18 AWG Color	Pin	Signal	18 AWG Color
1*	+3.3VDC	Orange	11	+3.3VDC	Orange
	3.3V RS	Orange/White (24AWG)	12	-12VDC	Blue
2	+3.3VDC	Orange	13	COM	Black
3	COM	Black	14	PSON#	Green (24AWG)
4	+5VDC	Red	15*	COM	Black
5	COM	Black		COMRS	Black (24AWG)
6	+5VDC	Red	16	COM	Black
7	COM	Black	17	COM	Black
8	PWR OK	Gray (24AWG)	18	Reserved	N.C.
9	5 VSB	Purple	19	+5VDC	Red
10*	+12V	Yellow	20*	+5VDC	Red
	12VRS	Yellow/White (24AWG)		5VRS	Red/White (24AWG)

Notes:

1. Remote Sense wire double crimped.
2. P1 add cable bend requirement at P1.

2.2.2 Processor Power Connector (P2)

Connector housing: 8-Pin Molex 39-01-2085 or equivalent.
Contact: 44476-1111 or Molex 5556 as the alternative, or equivalent.

Table 6. P2 Processor Power Connector

Pin	Signal	18 AWG color	Pin	Signal	18 AWG Color
1	COM	Black	5	+12V	Yellow
2	COM	Black	6	+12V	Yellow
3	N.C.		7	N.C.	
4	N.C.		8	N.C.	

2.2.3 SATA Hard Drive Power Connectors (P4, P5)

Connector housing: JWT A3811H00-5P (94V2) or equivalent.
Contact: JWT A3811TOP-0D or equivalent.

Table 7. HD Power Connector

Pin	Signal	18 AWG Color
1	+3.3V	Orange
2	COM	Black
3	+5VDC	Red
4	COM	Black
5	+12V	Yellow

2.2.4 Intel® Server System SR1530HSH P7 Hot-swap Backplane Power Connector

Connector housing: 8-pin Molex* 39-01-2085 2 x 4 or equivalent.
Contact: Molex* 2x4 mini fit Jr, HCS, 44476-3111 or equivalent.

Table 8. P7 HSBP Power Connector

PIN	SIGNAL	18 AWG COLOR	PIN	SIGNAL	18 AWG COLOR
1	COM	Black	5	12V4	Blue/White Stripe
2	COM	Black	6	NC	
3	+5V	Red	7	NC	
4	NC		8	3.3V	Orange

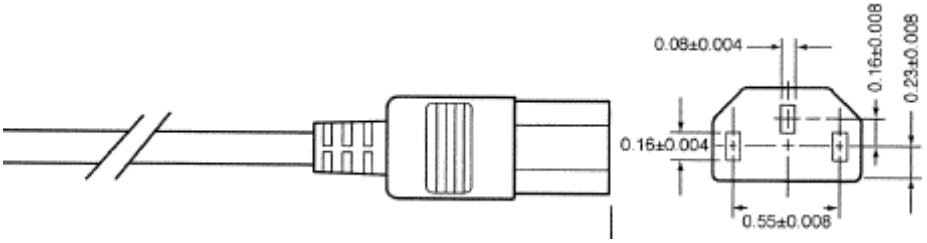
2.3 AC Inlet Connector

The AC input connector shall be an *IEC 320 C-14* power inlet. This inlet is rated for 10A / 250VAC.

2.3.1 AC Power Cord Specification Requirements

The AC power cord must meet the following specification requirements:

Cable Type	SJT
Wire Size	16 AWG
Temperature Rating	105º C
Amperage Rating	13A
Voltage Rating	125V



2.4 Marking and Identification

The power supply module marking supports the following requirements: safety agency requirements, government requirements (if required, e.g. point of manufacturing), power supply vendor requirements, and Intel manufacturing and field support requirements.

2.5 AC Input Voltage

The power supply must operate within all specified limits over the following input voltage range, shown in table below. Harmonic distortion of up to 10% of the **rated line voltage** must not cause the power supply to go out of specified limits. The power supply shall power off if the AC input is less than 75VAC +/-5VAC range. The power supply shall start up if the AC input is greater than 85VAC +/-4VAC. Application of an input voltage below 85VAC shall not cause damage to the power supply, including a fuse blow.

Table 9. AC Input Rating

PARAMETER	MIN	RATED	V_{MAX}	I_{MAX}	Start up VAC	Power Off VAC
Voltage (110)	90 V_{rms}	100-127 V_{rms}	140 V_{rms}	**6 A**[1, 3]	85VAC +/-4VAC	75VAC +/-5VAC
Voltage (220)	180 V_{rms}	200-240 V_{rms}	264 V_{rms}	**3 A**[2, 3]		
Frequency	47 Hz	50/60	63 Hz			

Notes:

1. Maximum input current at low input voltage range shall be measured at 90VAC, at max load.
2. Maximum input current at high input voltage range shall be measured at 180VAC, at max load.
3. This requirement is not to be used for determining agency input current markings.

2.6 Output Power / Currents

The following tables define two power and current ratings for this 350 W power supply. The combined output power of all outputs shall not exceed the rated output power. The power supply must meet both static and dynamic voltage regulation requirements for the minimum loading conditions.

Table 10. Load Ratings

Voltage	Minimum Continuous Load	Maximum Continuous Load[1, 3]	Peak Load[2, 3]
+3.3V[4]	1.5 A	14 A	
+5V[4]	1.0 A	18 A	
+12V	1.5 A	24 A	28 A
-12V	0 A	0.3 A	
+5VSB	0.1 A	2.0 A	2.5 A

Notes:

1. Maximum continuous total DC output power should not exceed **350 W**.
2. Peak total DC output power should not exceed **400 W**.
3. Peak power and peak current loading shall be supported for a minimum of **12 seconds**.
4. Combined 3.3V/5V power shall not exceed **100 W**.

2.7 Protection Circuits

Protection circuits inside the power supply shall cause only the power supply's main outputs to shutdown. If the power supply latches off due to a protection circuit tripping, an AC cycle OFF for 15 sec and a PSON# cycle HIGH for 1 sec shall be able to reset the power supply.

2.8 Over-Current Limit (OCP)

The power supply shall have current limits to prevent the +3.3V, +5V, and +12V outputs from exceeding the values shown in the table below. If the current limits are exceeded, the power supply shall shutdown and latch off. The latch will be cleared by toggling the PSON# signal or by an AC power interruption. The power supply shall not be damaged from repeated power cycling in this condition. -12V and 5VSB shall be protected under over-current or shorted conditions so that no damage can occur to the power supply. 5Vsb will be auto-recovered after removing the OCP limit.

Table 11. Over Current Protection (OCP)

VOLTAGE	OVER CURRENT LIMIT	
	MIN	MAX
+3.3V	15A	21A
+5V	20A	27A
+12V	30A	40A
-12V	0.625A	2A
5VSB	N/A	4A

2.9 Over-Voltage Protection (OVP)

The power supply over-voltage protection shall be locally sensed. The power supply shall shutdown and latch off after an over-voltage condition occurs. This latch shall be cleared by toggling the PSON# signal or by an AC power interruption. The table below contains the over-voltage limits. The values are measured at the output of the power supply's pins. The voltage shall never exceed the maximum levels when measured at the power pins of the power supply connector during any single point of fail. The voltage shall never trip any lower than the minimum levels when measured at the power pins of the power supply connector. 5Vsb will be auto-recovered after removing the OVP limit.

Exception: +5VSB rail should be able recover after its over-voltage condition occurs.

Table 12. Over-Voltage Protection (OVP) Limits

Output Voltage	MIN (V)	MAX (V)
+3.3V	3.9	4.5
+5V	5.7	6.5
+12V	13.3	14.5
-12V	-13.3	-16
+5VSB	5.7	6.5

2.10 Over-Temperature Protection (OTP)

The power supply will be protected against over-temperature conditions caused by loss of fan cooling or excessive ambient temperature. In an OTP condition the power supply will shutdown. When the power supply temperature drops to within specified limits, the power supply shall restore power automatically, while the 5VSB remains always on. The OTP circuit must have built in hysteresis such that the power supply will not oscillate on and off due to temperature recovering condition. The OTP trip level shall have a minimum of 4°C of ambient temperature hysteresis.

3. Cooling Sub-System

The Intel® Server System SR1530HSH cooling sub-system consists of two 97 x 94 x 33 blower fans, a CPU air duct, and a PS / electronics bay isolation air baffle. The Intel® Server System SR1530SH also includes one additional 40 x 40 x 15 PCI cooling fan. These components are used to provide the necessary cooling and airflow to the system. A fan on the processor heat sink is not needed.

To maintain the necessary airflow within the system, the air duct and the top cover must be properly installed.

Note: *The Intel® Server Systems SR1530SH / SR1530HSH do not support redundant cooling. If a fan blower fails, the system should be powered down as soon as possible to replace the failed fan blower. The system fans are not hot-swappable.*

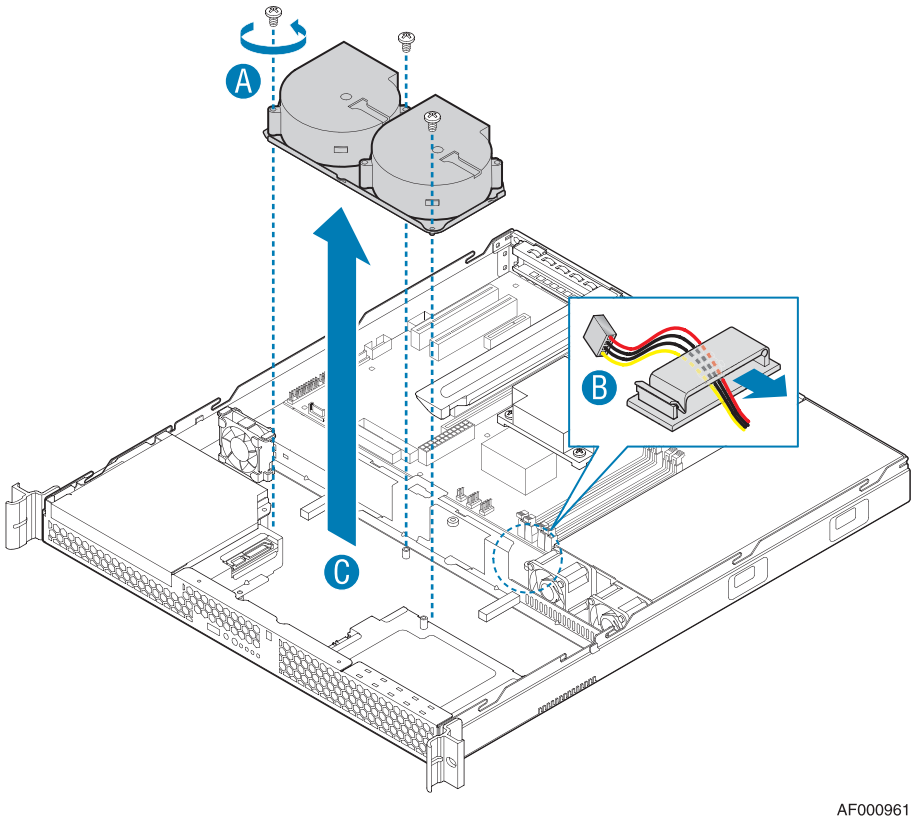


Figure 9. Intel® Server System SR1530SH Fan Module Assembly

Table 13. Intel® Server System SR1530SH Cooling Zones

Fan	Cooling Zone	Greatest Cooling Influence
System Fan Blower #1 and #2	CPU/MCH	Primary cooling for the CPU and the system memory
PCI Cooling Fan	PCI	Primary cooling for HDD0, full-height PCI cards, PXH
Power Supply Fans	PS	Primary cooling for HDD1 and the 350W power supply

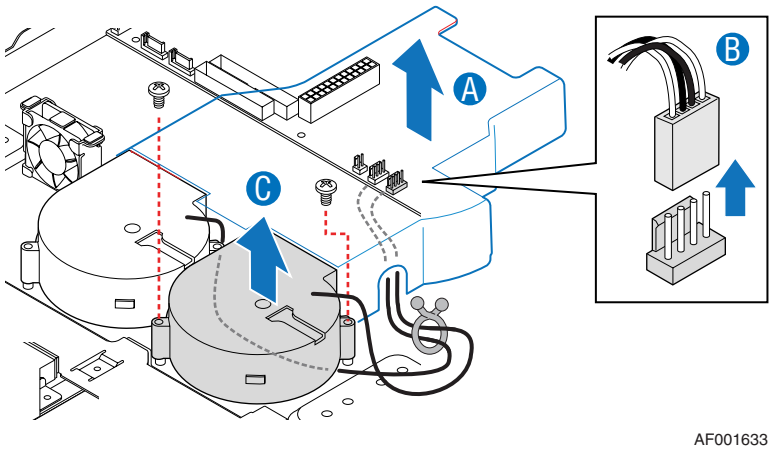


Table 14. Intel® Server System SR1530HSH Cooling Zones

Fan	Cooling Zone	Greatest Cooling Influence
System Fan Blower #1 and #2	CPU/MCH/PCI	The two system blowers provide cooling for the CPU, Memory, MCH, PCI slot and Hard Disk Drives
Power Supply Fans	PS	350W power supply

3.1 Power Supply Fans

The power supply supports two non-redundant 40 mm fans. They are responsible for the cooling of the power supply and the second hard drive bay.

3.2 CPU Air Duct

The chassis requires the use of a CPU air duct to direct airflow through MCH, processor heat sink, and the memory area.

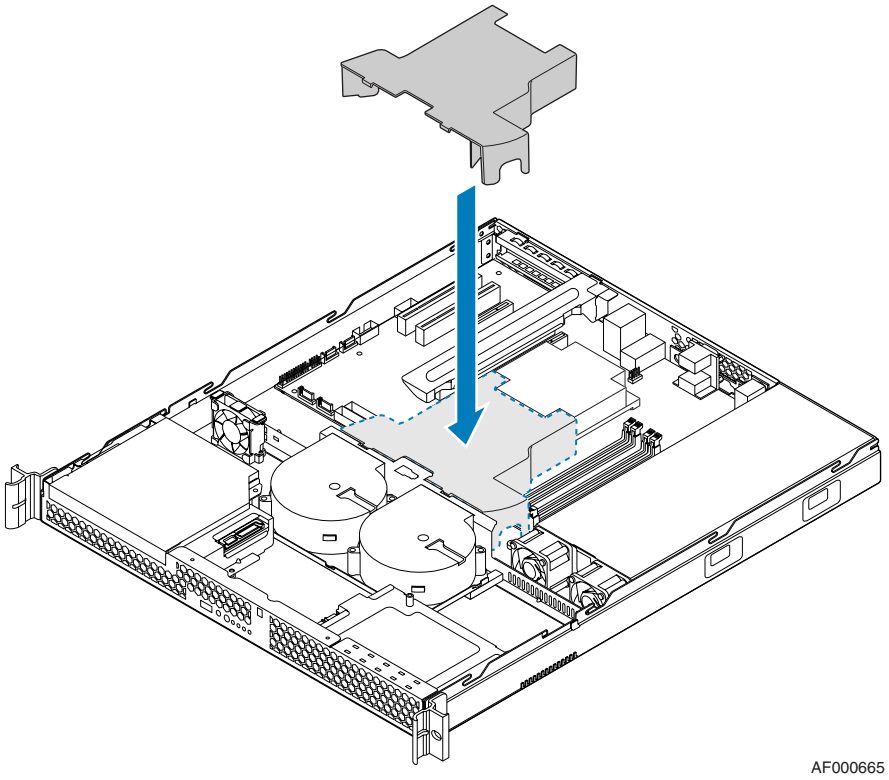


Figure 10. Intel® Server System SR1530SH Air Duct

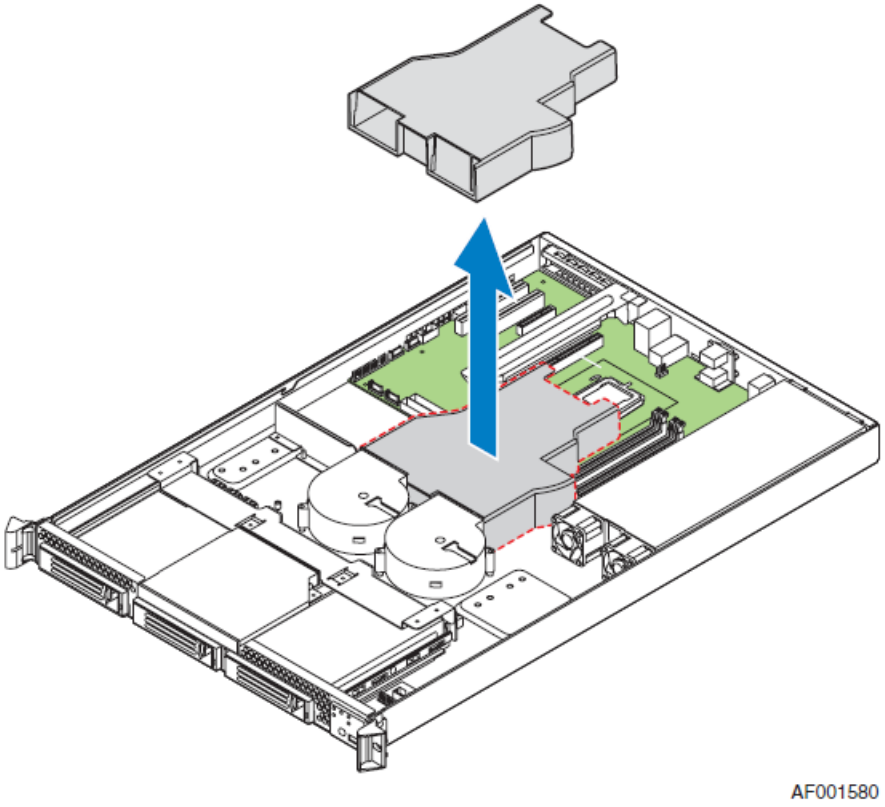
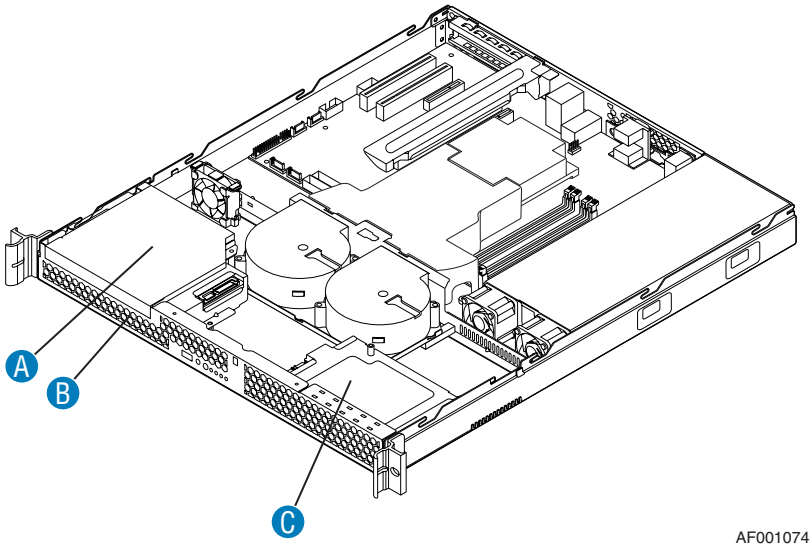


Figure 11. Intel® Server System SR1530HSH Air Duct

4. Peripheral and Hard Drive Support

The Intel® Server System SR1530SH provides support for two fixed hard drive bays and one slimline peripheral drive bay at the front of the chassis. The fixed hard drive bays are designed to support SATA drives only.



A	Slimline optical drive bay
B	Hard drive bay HDD0 (located under the slimline optical drive bay)
C	Hard drive bay HDD1

Figure 12. Drive Bays

The Intel® Server System SR1530HSH provides support for three hot-swap hard drive bays and one slimline peripheral drive bay at the front of the system. The hot-swap drive bays are designed to support SATA drives only.

4.1 Optical Drive Support

Both the fixed and hot-swap systems provide a slimline drive bay that can be configured for a SATA optical CD-ROM, or DVD/CDR drive. The slimline devices are not hot-swappable.

4.1.1 Optical Drive Support

The server systems supports a slimline SATA optical drive. The drive is mounted with two side mount rail accessories and is connected to an interposer card attached to the drive. The drive assembly is then installed in to the slimline drive bay.

4.2 Hard Disk Drive Support

The Intel® Server System SR1530SH supports up to two 3.5-inch by 1-inch fixed SATA hard disk drives. The drives are mounted inside the chassis and are not hot-swappable. The Intel® Server System SR1530HSH supports up to three SATA hard disk drives mounted in hot-swappable drive carriers.

4.2.1 System Fan Connectors

The Intel® Server Systems SR1530SH supports two system fan blowers and one PCI cooling fan. The Intel® Server System SR1530HSH supports two system blower fans. The pin-out for each connector is provided in the following table.

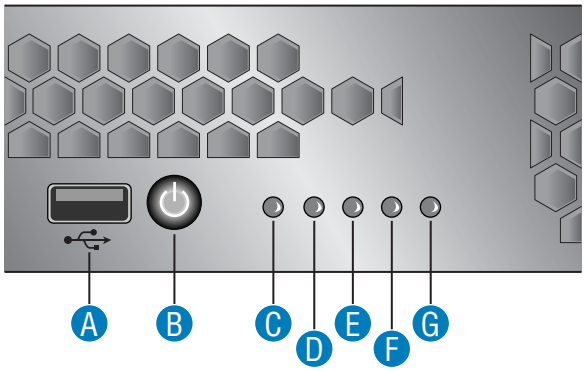
Table 15. System Four-pin Fan Headers Pin-outs (J7J1, J8D1, J4J1, and J6B1, J6J1)

Pin	Signal Name	Type	Description
1	Ground	Power	GROUND is the power supply ground.
2	Fan Power	Power	Fan Power
3	Fan Tach	Out	FAN_TACH signal is connected to the Heceta* to monitor the FAN speed.
4	PWM	Control	Pulse Width Modulation – Fan Speed Control signal

5. Front Control Panel

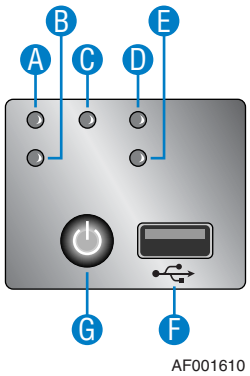
The standard control panel supports a power button, status LED, hard drive activity LED, and NIC 1 and NIC 2 activity LEDs. The control panel assembly comes pre-assembled into the chassis. The control panel assembly module slides into a predefined slot on the front of the chassis. Once installed, communication to the server board can be achieved through a standard 24-pin cable connected directly to the server board.

Note: *The status LED is not used on the Intel® Server Systems SR1530SH / SR1530HSH.*



Item	Feature
A	USB port
B	Power button. This button also functions as a sleep button if enabled by an ACPI-compliant operating system.
C	Not Used
D	System power LED
E	Hard drive activity LED
F	NIC 1 LED
G	NIC 2 LED

Figure 13. Intel® Server System SR1530SH Front Control Panel



Item	Feature
A	NIC 1 LED
B	NIC 2 LED
C	System power LED
D	Not Used
E	Hard drive activity LED
F	USB port
G	Power button. This button also functions as a sleep button if enabled by an ACPI-compliant operating system.

Figure 14. Intel® Server System SR1530HSH Front Control Panel

Table 16. Control Panel LED Functions

LED	Color	State	Description
NIC1 / NIC2 Activity	Green	On	NIC Link/no access
	Green	Blink	LAN access
Power / Sleep (on standby power)	Green	On	Power on
		Blink	Sleep / ACPI S1 state
	Off	Off	Power Off / ACPI S4 state
System Status (on standby power)	The status LED is not used on the Intel® Server Systems SR1530SH / SR1530SHLX / SR1530HSH.		
Disk Activity	Green	Random blink	HDD access
	Off	Off	No hard disk activity

The current limiting resistors for the power LED, the system fault LED, and the NIC LEDs are located on the Intel® Server Board S3200SHL.

5.1.1 Power / Sleep LED

Table 17. SSI Power LED Operation

State	Power Mode	LED	Description
Power Off	Non-ACPI	Off	System power is off, and the BIOS has not initialized the chipset.
Power On	Non-ACPI	On	System power is on, but the BIOS has not yet initialized the chipset.
S5	ACPI	Off	Mechanical is off, and the operating system has not saved any context to the hard disk.
S4	ACPI	Off	Mechanical is off, and the operating system has saved context to the hard disk.
S3-S1	ACPI	Slow blink [1]	DC power is still on. The operating system has saved context and gone into a level of low-power state.
S0	ACPI	Steady on	System and the operating system are up and running.

Note:

- The blink rate is ~ 1Hz with at 50% duty cycle.

5.1.2 System Status LED

The system status LED is not available on the Intel® Server Board S3200SHL or the Intel® Server Systems SR1530SH / SR1530HSH.

5.1.3 Drive Activity LED

The drive activity LED on the front panel indicates drive activity from the onboard hard disk controllers. The Intel® Server Board S3200SHL also provides a header giving access to this LED for add-in controllers.

6. PCI Riser Cards and Assembly

The Intel® Server Board S3200SHL supports a PCI Express* x16 riser card.

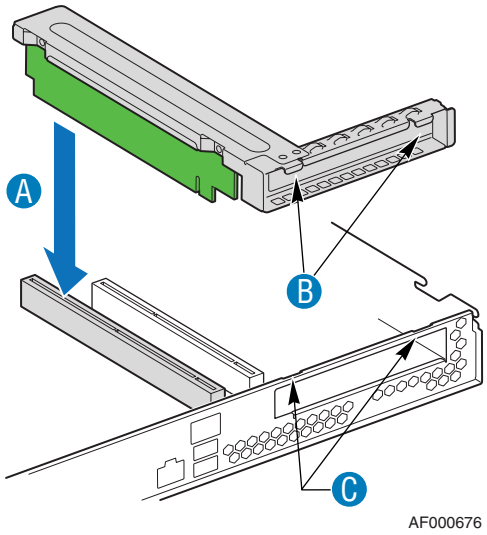


Figure 15. PCIe* Riser Card Assembly

Intel® Server System SR1530HSH Passive SAS/SATA Hot-swap Backplane

The Intel® Server System SR1530HSH supports a passive backplane designed to be compatible with the Intel® Server Board S3200SHL. The Intel® Server Board S3200SHL is connected directly to the SATA backplane (default) or the backplane may be connected to an add-in SAS or SATA adapter.

The system supports a multifunctional SATA/SAS backplane with the following features:

- Three SATA/SAS compatible hot-swap hard drive connectors.
- Three SATA/SAS connectors to the baseboard.
- Hard Drive Activity LED for each hard drive connector.
- One 2x4-pin power connector.

The Intel® Server Board S3200 on-board SATA controller will support the following RAID Arrays:

- Intel® Embedded Server RAID Technology - RAID 0 or RAID 1
- Intel® Matrix Storage Manager - RAID 0, 1 or 5 (Microsoft Windows* only)

The drive status LEDs are not supported on this system; a drive failure must be determined by using third party management software. A failed drive and drive rebuild activity may be recognized by observing the drive activity LED.

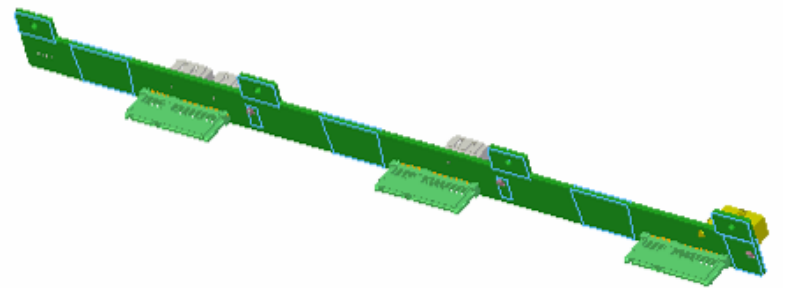


Figure 16. Intel® Server System SR1530HSH Hot-swap Backplane

Table 18. Passive SATA/SAS Backplane Power Connector Pin-out (J7)

Pin #	Signal Name
1	Ground
2	Ground
3	P5V
4	P5V
5	P12V
6	P12V
7	No Connection
8	P3V3

Table 19. Passive SATA/SAS Backplane Connector to Hard Drive Pin-out (J1, J2, J3)

Pin #	Signal Name
S1	Ground
S2	SAS_DRVxA_RX_P
S3	SAS_DRVxA_RX_N
S4	Ground
S5	SAS_DRVxA_TX_N
S6	SAS_DRVxA_TX_P
S7	Ground
P1	TP
P2	TP
P3	TP
P4	Ground
P5	Ground
P6	Ground
P7	P5V_DRVx_PRECHG
P8	P5V
P9	P5V
P10	Ground
P11	LED_DRVx_READY_N
P12	Ground
P13	P12V_DRVx_PRECHG
P14	P12V
P15	P12V

Table 20. Passive SATA/SAS Backplane I/O Connector to Baseboard Pin-out (J4, J5, J6)

Pin #	Signal Name
1	Ground
2	SASx_EP_RX_P
3	SASX_EP_RX_N
4	Ground
5	SASx_EP_TX_N
6	SASx_EP_TX_P
7	Ground

6.1.1 Hot-swap Drive Trays

Each hard drive must be mounted to a hot-swap drive tray, making insertion and extraction of the drive from the system very simple. Each drive tray has its own dual purpose latching mechanism which is used to both insert/extract drives from the system and lock the tray in place. Each drive tray supports a light pipe providing a drive activity indicator, located on the backplane, to be viewable from the front of the system.

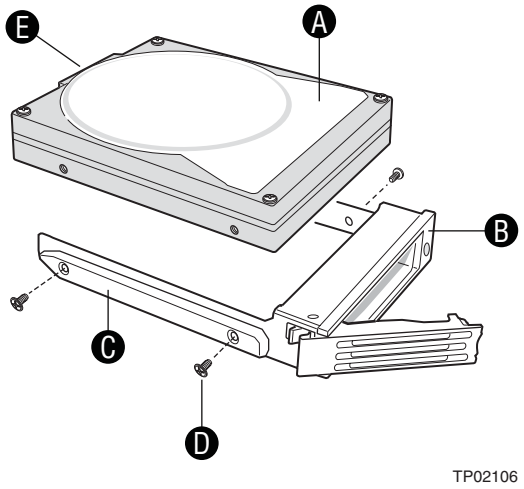


Figure 17. Hard Drive Tray Assembly

Item	Description
A	Hard Drive
B	Drive Carrier
C	Slide Rail
D	Mounting Screw
E	Hard Drive Connector

7. Supported Intel® Server Board

The Intel® Server Systems SR1530SH / SR1530HSH are mechanically and functionally designed to support the Intel® Server Board S3200SHL. See the Intel® Server Board S3200SH/S3210SH Technical Product Specification for detailed server board information.

8. Environmental and Regulatory Specifications

8.1 System Level Environmental Limits

The table below defines the system level operating and non-operating environmental limits.

Table 21. System Environmental Limits Summary

Parameter	Limits
Operating Temperature	+10°C to +30°C with the maximum rate of change not to exceed 10°C per hour
Non-Operating Temperature	-40°C to +70°C
Non-Operating Humidity	90%, non-condensing at 35°C
Acoustic noise	Sound Power: 7.0 BA in an idle state at typical office ambient temperature. (23 +/- 2 degrees C)
Shock, operating	Half sine, 2 g peak, 11 mSec
Shock, unpackaged	Trapezoidal, 25 g, velocity change 136 inches/sec (≧40 lbs to > 80 lbs)
Shock, packaged	Non-palletized free fall in height 24 inches (≧40 lbs to > 80 lbs)
Vibration, unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
Shock, operating	Half sine, 2 g peak, 11 mSec
ESD	+/-15kV except I/O port +/-8KV per Intel Environmental test specification
System Cooling Requirement in BTU/Hr	1660 BTU/hour

8.2 Product Regulatory Compliance

8.2.1 Product Safety Compliance

The platform complies with the following safety requirements:

UL60950 – CSA 60950(USA / Canada)
EN60950 (Europe)
IEC60950 (International)
CB Certificate & Report, IEC60950 (report to include all country national deviations)
GS License (Germany)
GOST R 50377-92 - License (Russia)
Belarus License (Belarus)
Ukraine License (Ukraine)
CE - Low Voltage Directive 73/23/EEE (Europe)
IRAM Certification (Argentina)
GB4943- CNCA Certification (China)
BSMI certification (Taiwan)

8.2.2 Product EMC Compliance

The platform has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations when installed a compatible Intel host system. For information on compatible host system(s) refer to Intel's Server Builder website or contact your local Intel representative.

FCC (Class A Verification) – Radiated & Conducted Emissions (USA)
ICES-003 – (Canada)
CISPR 22 – Emissions (International)
EN55022 - Emissions (Europe)
EN55024 - Immunity (Europe)
EN61000-3-2 - Harmonics (Europe)
EN61000-3-3 - Voltage Flicker (Europe)
CE – EMC Directive 89/336/EEC (Europe)
VCCI Emissions (Japan)
AS/NZS 3548 Emissions (Australia / New Zealand)
BSMI CNS13438 Emissions (Taiwan)
GOST R 29216-91 Emissions (Russia)
GOST R 50628-95 Immunity (Russia)
Belarus License (Belarus)
Ukraine License (Ukraine)
RRL MIC Notice No. 1997-41 (EMC) & 1997-42 (EMI) (Korea)
GB 9254 - CNCA Certification (China)
GB 17625 - (Harmonics) CNCA Certification (China)

8.2.3 Certifications / Registrations / Declarations

UL Certification (US/Canada)
CB Certification (International)
CE Declaration of Conformity (CENELEC Europe)
GS Certification (Germany)
FCC/ICES-003 Class A Attestation (USA/Canada)
VCCI Certification (Japan)
C-Tick Declaration of Conformity (Australia/New Zealand)
BSMI Certification (Taiwan)
GOST R Certification / License (Russia)
Belarus Certification / License (Belarus)
Ukraine Certification (Ukraine)
RRL Certification (Korea)
IRAM Certification (Argentina)

CNCA Certification (China)

Ecology Declaration (International)

8.2.4 Product Regulatory Compliance Markings

The Intel® Server Chassis SR1530 is provided with the following regulatory marks.

Item	Requirement	Description		P	R	Y/N/D	Src
	Regulatory Markings	Argentina (IRAM Mark)		1	1	Y	
	Regulatory Markings	Australia / NZ Ctick Mark	N232	1	1	Y	
	Regulatory Markings	Canada EMC Marking	CANADA ICES-OO3 CLASS A CANADA NMB-003 CLASSE A	1	1	Y	
	Regulatory Markings	China (CNCA)	 声明 此为A级产品,在生活中,该产品可能会造成无线电干扰.在这种情况下,可能需要用户对其干扰采取可行的措施.	1	1	Y	
	Regulatory Markings	Europe (CE Mark)		1	1	Y	
	Regulatory Markings	Germany (GS Mark)		1	1	Y	
	Regulatory Markings	Japan (VCCI Mark)	この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。VCCI-A	1	1	Y	
	Regulatory Markings	Korea (RRL Mark)	 인증번호: CPU-SR1520 (A)	1	1	Y	
	Regulatory Markings	Russia (GOST Mark)		1	1	Y	
	Regulatory Markings	Taiwan (BSMI Mark)	 R33025 警告使用者： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策	1	1	Y	

	Regulatory Markings	USA / Canada (UL Mark)		1	1	Y	
	Regulatory Markings	USA (FCC Mark)	This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept interference receive, including interference that may cause undesired operation.	1	1	Y	
	Regulatory Markings	Country of Origin Mark	Made in XXXX	1	1	Y	
	Regulatory Markings	Nordic Ground Marking	Line1 : "WARNING:" Swedish on line2: "Apparaten skall anslutas till jordat uttag, när den ansluts till ett nätverk." Finnish on line 3: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan." English on line 4: "Connect only to a properly earth grounded outlet."	1	1	Y	
	Regulatory Markings (If multiple cords)	Multiple Power Cord	English: This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect (2) two power supply cords before servicing. Simplified Chinese: 注意： 本设备包括多条电源系统电缆。为避免遭受电击，在进行维修之前应断开两（2）条电源系统电缆。 Traditional Chinese: 注意： **本設備包括多條電源系統電纜。為避免遭受電擊，在進行維修之前應斷開兩（2）條電源系統電纜。** German: Dieses Geräte hat mehr als ein Stromkabel. Um eine Gefahr des elektrischen Schlages zu verringern trennen sie beide (2) Stromkabeln bevor Instandhaltung.	1	1	Y	
	Regulatory Markings	WEEE Marking		1	1	Y	

	Regulatory Markings	China RoHS		1	1	Y	
	Regulatory Markings	China Recycling Package Marks	Will be added on Package label	1	1	Y	
	Regulatory Markings	Other Recycling Package Marks	Will be added on Package label	1	1	Y	
		CA. Lithium Perchlorate insert	Perchlorate Material – Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate This notice is required by California Code of Regulations, Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials. This product / part includes a battery which contains Perchlorate material.	1	1	Y	
		Standard icon for Power button	Should be attached on power button	1	1	Y	

8.3 Electromagnetic Compatibility Notices

8.3.1 USA

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124
1-800-628-8686

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals that are not shielded and grounded may result in interference to radio and TV reception.

8.3.2 FCC Verification Statement

Product Type: SR1530; S3200SHL;

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124-6497

Phone: 1 (800)-INTEL4U or 1 (800) 628-8686

8.3.3 ICES-003 (Canada)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: “Appareils Numériques”, NMB-003 édictée par le Ministre Canadian des Communications.

(English translation of the notice above) This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Canadian Department of Communications.

8.3.4 Europe (CE Declaration of Conformity)

This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

8.3.5 Japan EMC Compatibility

Electromagnetic Compatibility Notices (International)

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

English translation of the notice above:

This is a Class A product based on the standard of the Voluntary Control Council For Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

8.3.6 BSMI (Taiwan)

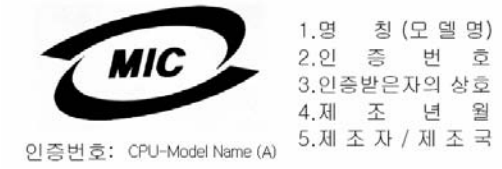
The BSMI Certification number and the following warning is located on the product safety label which is located on the bottom side (pedestal orientation) or side (rack mount configuration).

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

8.3.7 RRL (Korea)

Following is the RRL certification information for Korea.



English translation of the notice above:

1. Type of Equipment (Model Name): On License and Product
2. Certification No.: On RRL certificate. Obtain certificate from local Intel representative
3. Name of Certification Recipient: Intel Corporation
4. Date of Manufacturer: Refer to date code on product
5. Manufacturer/Nation: Intel Corporation/Refer to country of origin marked on product

8.3.8 CNCA (CCC-China)

The CCC Certification Marking and EMC warning is located on the outside rear area of the product.

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取可行的措施。

8.4 Replacing the Back up Battery

The lithium battery on the server board powers the real time clock (RTC) for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings stored in CMOS RAM in the RTC (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved devices.

WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

8.5 Serviceability and Availability

The system is designed to be serviced by qualified technical personnel only.

The desired Mean Time To Repair (MTTR) of the system is 30 minutes including diagnosis of the system problem. To meet this goal, the system enclosure and hardware have been designed to minimize the MTTR.

Following are the maximum times that a trained field service technician should take to perform the listed system maintenance procedures, after diagnosis of the system and having identified the failed component.

Activity	Time Estimate
Remove cover	1 min
Remove and replace hard disk drive	5 min
Remove and replace power supply module	1 min
Remove and replace system fan	7 min
Remove and replace control panel module	2 min
Remove and replace baseboard	15 min

8.5.1 Product Ecology Requirements

Intel has a system in place to restrict the use of banned substances in accordance with world wide product ecology regulatory requirements. Suppliers Declarations of Conformity to the banned substances must be obtained from all suppliers; and a Material Declaration Data Sheet (MDDS) must be produced to illustrate compliance. Due verification of random materials is required as a screening / audit to verify suppliers declarations.

Item	Requirement	Description	P	R	Y/N/D	Src
	Product Ecology	All materials, parts and subassemblies must not contain restricted materials as defined in Intel's Environmental Product Content Specification of Suppliers and Outsourced Manufacturers – http://supplier.intel.com/ehs/environmental.htm	1	1	Y	
	Product Ecology	Europe - European Directive 2002/95/EC - Restriction of Hazardous Substances (RoHS) Threshold limits and banned substances are noted below. Quantity limit of 0.1% by mass (1000 PPM) for: Lead, Mercury, Hexavalent Chromium, Polybrominated Biphenyls Diphenyl Ethers (PBB/PBDE) Quantity limit of 0.01% by mass (100 PPM) for: Cadmium	1	1	Y	

	Product Ecology	China RoHS	1	1	Y	
	Product Ecology	WEEE Directive	1	1	Y	
	Product Ecology	All plastic parts that weigh >25gm shall be marked with the ISO11469 requirements for recycling. Example >PC/ABS<	1	1	Y	
	Product Ecology	EU Packaging Directive	1	1	Y	

8.6 Regulated Specified Components

To maintain the UL listing and compliance to other regulatory certifications and/or declarations, the following regulated components must be used and conditions adhered to. Interchanging or use of other component will void the UL listing and other product certifications and approvals.

Updated product information for configurations can be found on the Intel Server Builder Web site at the following URL: http://channel.intel.com/go/serverbuilder.
If you do not have access to Intel's Web address, please contact your local Intel representative.

Server chassis (base chassis is provided with power supply and fans)—UL listed.

Server board—you must use an Intel server board—UL recognized.

Add-in boards—must have a printed wiring board flammability rating of minimum UL94V-1. Add-in boards containing external power connectors and/or lithium batteries must be UL recognized or UL listed. Any add-in board containing modem telecommunication circuitry must be UL listed. In addition, the modem must have the appropriate telecommunications, safety, and EMC approvals for the region in which it is sold.

Peripheral storage devices—must be UL recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19 watts. Total server configuration is not to exceed the maximum loading conditions of the power supply

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Appendix A: Integration and Usage Tips

This section provides a list of useful information that is unique to the Intel® Server Chassis SR1530 and should be kept in mind while integrating and configuring your Intel® Server Board S3200SHL.

- Only low-profile (1.2 inch or 30.48 mm) DIMMs can be used in the server chassis.
- Processor fans are not needed and are not supported. The system fan module and power supply fans provide the necessary cooling needed for the system. Using a processor fan in this chassis may cause Intel® System Management Software to incorrectly monitor the system fans.
- The air duct must be used to maintain system thermals.
- System fans are not hot-swappable.
- A screw on the front edge of the top cover is required when the unit is installed in a user-accessible environment.
- Make sure the latest system software is loaded. This includes system BIOS. The latest system software can be downloaded from http://support.intel.com/support/motherboards/server/S3200SH/

Appendix B: POST Code Diagnostic LED Decoder

During the system boot process, the BIOS executes a number of platform configuration processes, each of which is assigned a specific hex POST code number. As each configuration routine is started, the BIOS will display the given POST code to the POST Code Diagnostic LEDs found on the back edge of the server board. To assist in troubleshooting a system hang during the POST process, the diagnostic LEDs can be used to identify the last POST process to be executed.

Each POST code will be represented by a combination of colors from the four LEDs. The LEDs are capable of displaying three colors: green, red, and amber. The POST codes are divided into two nibbles, an upper nibble and a lower nibble. Each bit in the upper nibble is represented by a red LED and each bit in the lower nibble is represented by a green LED. If both bits are set in the upper and lower nibbles then both red and green LEDs are lit, resulting in an amber color. If both bits are clear, then the LED is off.

In the below example, BIOS sends a value of ACh to the diagnostic LED decoder. The LEDs are decoded as follows:

red bits = 1010b = Ah

green bits = 1100b = Ch

Since the red bits correspond to the upper nibble and the green bits correspond to the lower nibble, the two are concatenated to be ACh.

Note: *The following example is for illustrative purposes only; the diagram does not match the back edge of the server board in the Intel® Server Systems SR1530SH / SR1530SHLX.*

Table 22. POST Progress Code LED Example

	8h		4h		2h		1h	
LEDs	**Red**	**Green**	**Red**	**Green**	**Red**	**Green**	**Red**	**Green**
ACh	1	1	0	1	1	0	0	0
Result	Amber		Green		Red		Off	
	MSB						LSB	

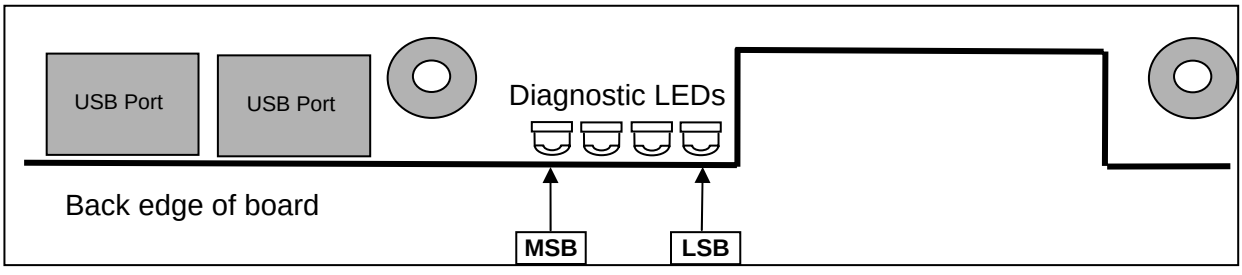

Figure 18. Diagnostic LED Placement Diagram Example

Table 23. Diagnostic LED POST Code Decoder

Checkpoint	Diagnostic LED Decoder G=Green, R=Red, A=Amber				Description
	MSB			**LSB**	
Host Processor					
0x10h	OFF	OFF	OFF	R	Power-on initialization of the host processor (bootstrap processor)
0x11h	OFF	OFF	OFF	A	Host processor cache initialization (including AP)
0x12h	OFF	OFF	G	R	Starting application processor initialization
0x13h	OFF	OFF	G	A	SMM initialization
Chipset					
0x21h	OFF	OFF	R	G	Initializing a chipset component
Memory					
0x22h	OFF	OFF	A	OFF	Reading configuration data from memory (SPD on DIMM)
0x23h	OFF	OFF	A	G	Detecting presence of memory
0x24h	OFF	G	R	OFF	Programming timing parameters in the memory controller
0x25h	OFF	G	R	G	Configuring memory parameters in the memory controller
0x26h	OFF	G	A	OFF	Optimizing memory controller settings
0x27h	OFF	G	A	G	Initializing memory, such as ECC init
0x28h	G	OFF	R	OFF	Testing memory
PCI Bus					
0x50h	OFF	R	OFF	R	Enumerating PCI busses
0x51h	OFF	R	OFF	A	Allocating resources to PCI busses
0x52h	OFF	R	G	R	Hot Plug PCI controller initialization
0x53h	OFF	R	G	A	Reserved for PCI bus
0x54h	OFF	A	OFF	R	Reserved for PCI bus
0x55h	OFF	A	OFF	A	Reserved for PCI bus
0x56h	OFF	A	G	R	Reserved for PCI bus
0x57h	OFF	A	G	A	Reserved for PCI bus
USB					
0x58h	G	R	OFF	R	Resetting USB bus
0x59h	G	R	OFF	A	Reserved for USB devices
ATA / ATAPI / SATA					
0x5Ah	G	R	G	R	Resetting PATA / SATA bus and all devices
0x5Bh	G	R	G	A	Reserved for ATA
SMBUS					
0x5Ch	G	A	OFF	R	Resetting SMBUS
0x5Dh	G	A	OFF	A	Reserved for SMBUS
Local Console					
0x70h	OFF	R	R	R	Resetting the video controller (VGA)
0x71h	OFF	R	R	A	Disabling the video controller (VGA)
0x72h	OFF	R	A	R	Enabling the video controller (VGA)
Remote Console					

Checkpoint	Diagnostic LED Decoder G=Green, R=Red, A=Amber				Description
	MSB			LSB	
0x78h	G	R	R	R	Resetting the console controller
0x79h	G	R	R	A	Disabling the console controller
0x7Ah	G	R	A	R	Enabling the console controller
Keyboard (PS2 or USB)					
0x90h	R	OFF	OFF	R	Resetting the keyboard
0x91h	R	OFF	OFF	A	Disabling the keyboard
0x92h	R	OFF	G	R	Detecting the presence of the keyboard
0x93h	R	OFF	G	A	Enabling the keyboard
0x94h	R	G	OFF	R	Clearing keyboard input buffer
0x95h	R	G	OFF	A	Instructing keyboard controller to run Self Test (PS2 only)
Mouse (PS2 or USB)					
0x98h	A	OFF	OFF	R	Resetting the mouse
0x99h	A	OFF	OFF	A	Detecting the mouse
0x9Ah	A	OFF	G	R	Detecting the presence of mouse
0x9Bh	A	OFF	G	A	Enabling the mouse
Fixed Media					
0xB0h	R	OFF	R	R	Resetting fixed media device
0xB1h	R	OFF	R	A	Disabling fixed media device
0xB2h	R	OFF	A	R	Detecting presence of a fixed media device (IDE hard drive detection, etc.)
0xB3h	R	OFF	A	A	Enabling / configuring a fixed media device
Removable Media					
0xB8h	A	OFF	R	R	Resetting removable media device
0xB9h	A	OFF	R	A	Disabling removable media device
0xBAh	A	OFF	A	R	Detecting presence of a removable media device (IDE CDROM detection, etc.)
0xBCh	A	G	R	R	Enabling / configuring a removable media device
Boot Device Selection					
0xD0	R	R	OFF	R	Trying boot device selection
0xD1	R	R	OFF	A	Trying boot device selection
0xD2	R	R	G	R	Trying boot device selection
0xD3	R	R	G	A	Trying boot device selection
0xD4	R	A	OFF	R	Trying boot device selection
0xD5	R	A	OFF	A	Trying boot device selection
0xD6	R	A	G	R	Trying boot device selection
0xD7	R	A	G	A	Trying boot device selection
0xD8	A	R	OFF	R	Trying boot device selection
0xD9	A	R	OFF	A	Trying boot device selection
0XDA	A	R	G	R	Trying boot device selection
0xDB	A	R	G	A	Trying boot device selection
0xDC	A	A	OFF	R	Trying boot device selection
0xDE	A	A	G	R	Trying boot device selection
0xDF	A	A	G	A	Trying boot device selection

Checkpoint	Diagnostic LED Decoder G=Green, R=Red, A=Amber				Description
	MSB			**LSB**	
Pre-EFI Initialization (PEI) Core					
0xE0h	R	R	R	OFF	Started dispatching early initialization modules (PEIM)
0xE2h	R	R	A	OFF	Initial memory found, configured, and installed correctly
0xE1h	R	R	R	G	Reserved for initialization module use (PEIM)
0xE3h	R	R	A	G	Reserved for initialization module use (PEIM)
Driver Execution Environment (DXE) Core					
0xE4h	R	A	R	OFF	Entered EFI driver execution phase (DXE)
0xE5h	R	A	R	G	Started dispatching drivers
0xE6h	R	A	A	OFF	Started connecting drivers
DXE Drivers					
0xE7h	R	A	A	G	Waiting for user input
0xE8h	A	R	R	OFF	Checking password
0xE9h	A	R	R	G	Entering BIOS setup
0xEAh	A	R	A	OFF	Flash Update
0xEEh	A	A	A	OFF	Calling Int 19. One beep unless silent boot is enabled.
0xEFh	A	A	A	G	Unrecoverable boot failure / S3 resume failure
Runtime Phase / EFI Operating System Boot					
0xF4h	R	A	R	R	Entering Sleep state
0xF5h	R	A	R	A	Exiting Sleep state
0xF8h	A	R	R	R	Operating system has requested EFI to close boot services (ExitBootServices ( ) has been called)
0xF9h	A	R	R	A	Operating system has switched to virtual address mode (SetVirtualAddressMap ( ) has been called)
0xFAh	A	R	A	R	Operating system has requested the system to reset (ResetSystem () has been called)
Pre-EFI Initialization Module (PEIM) / Recovery					
0x30h	OFF	OFF	R	R	Crisis recovery has been initiated because of a user request
0x31h	OFF	OFF	R	A	Crisis recovery has been initiated by software (corrupt flash)
0x34h	OFF	G	R	R	Loading crisis recovery capsule
0x35h	OFF	G	R	A	Handing off control to the crisis recovery capsule
0x3Fh	G	G	A	A	Unable to complete crisis recovery.

Appendix C: POST Error Beep Codes

The following table lists POST error beep codes. Prior to system video initialization, BIOS uses these beep codes to inform users on error conditions. The beep code is followed by a user visible code on POST Progress LEDs.

Table 24. POST Error Beep Codes

Beeps	Error Message	POST Progress Code	Description
3	Memory error		System halted because a fatal error related to the memory was detected.

Glossary

Word / Acronym	Definition
ACA	Australian Communication Authority
ANSI	American National Standards Institute
BMC	Baseboard Management Controller
CMOS	Complementary Metal Oxide Silicon
D2D	DC-to-DC
EMP	Emergency Management Port
FP	Front Panel
FRB	Fault Resilient Boot
FRU	Field Replaceable Unit
LCD	Liquid Crystal Display
LPC	Low-Pin Count
MTBF	Mean Time Between Failure
MTTR	Mean Time to Repair
OTP	Over-temperature Protection
OVP	Over-voltage Protection
PFC	Power Factor Correction
PSU	Power Supply Unit
RI	Ring Indicate
SCA	Single Connector Attachment
SDR	Sensor Data Record
SE	Single-Ended
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus
VCCI	Voluntary Control Council for Interference

Reference Documents

See the following documents for additional information:

- Intel® Server Board S3200SHL Technical Product Specification
- Intel® 3200 Series Chipsets Server Board Family Datasheet
- Intel® Server Chassis SR1530 AC Power Supply Module Specification
- Intel® Server Board S3200SH/S3210SH Tested Hardware and OS List
- Intel® Server Board S3200SHL / Intel® Server Systems SR1530SH/SR1530HSH Spares/Parts List and Configuration Guide